APPLICATION FOR UNITED STATES LETTERS PATENT FOR

WATER FILTER

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WATER FILTER

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Field of the Invention

[0001] The present invention relates to the field of water filters.

Background of the Invention

[0002] Water filters have become increasingly prevalent as consumers have become more health conscious. Typically, these water filters attach directly to the water faucet outlet and filter water as it flows out of the faucet. Generally, these water filters are comprised of replaceable filter cartridges that must be replaced after a certain period of time or use.

[0003] These water filters have also been applied to showerheads. For example, see U.S. Patent No. 6,325,930 to Farley. In Farley, a filter cartridge is placed into two top and bottom hollow mating half body portions. The top mating half portion has a pivotable inlet for attaching to the water pipe. While the prior art teaches a showerhead having a water filter, the prior art requires the filter to be placed in two half body portions which increases the size and complexity of the showerhead. Furthermore, the prior art showerhead has a pivotable inlet that is integral to the top mating half portion that cannot be removed or replaced from the showerhead.

Summary f the Inv ntion

[0004] The present invention overcomes the shortcomings of the prior art by providing a showerhead having a replaceable water filter that is compact and has a pivotable inlet portion that is removably attached to the filter cartridge.

[0005] The present invention relates to a water filter, comprising:

[0006] Figure 1A illustrates a cross-sectional elevational view of one embodiment of the shower filter of the present invention;

[0007] Figure 1B illustrates a bottom plan view of the shower filter of Figure 1A;

[0008] Figure 2A illustrates a blown-up view of the shower filter of Figure 1A;

[0009] Figure 2B illustrates a blown-up view of the filter cartridge of Figure 1A;

[0010] Figure 3A illustrates another blown-up view of the shower filter of Figure 1A;

[0011] Figure 3B illustrates another blown-up view of the filter cartridge of Figure 1A;

[0012] Figure 4A illustrates a cross-sectional elevational view of one embodiment of the filter cartridge of the present invention;

[0013] Figure 4B illustrates a bottom plan view of one embodiment of the filter cartridge of the present invention;

[0014] Figure 5 illustrates a cross-sectional elevational view of another embodiment of the shower fiter of the present invention;

[0015] Figure 6A illustrates a blown-up view of the shower filter of Figure 5;

[0016] Figure 6B illustrates a blown-up view of the filter cartridge of Figure 5.

Detailed Description of the Preferred Embodiment

[0017] **Figure 1A** illustrates a cross-sectional elevational view of one embodiment of the shower filter **10** of the present invention. **Figure 1B** illustrates a bottom plan view of the shower filter of **Figure 1A**. The shower filter of the present invention is preferably comprised of a body portion **12** having an opening **14**; a face portion **16** releasably coupled to the body portion; and a water filter assembly **18** adapted to reside in the body portion. The water filter assembly is comprised of a recess **20** for accepting a pivotable element **22** operatively connected to a threaded inlet **24** (the pivotable element combined with the threaded inlet hereafter referred to as the "pivotable inlet") having an inlet passage **26** for accepting water from a connected water pipe or shower arm. The body portion and the face portion are adapted with matching threads **28** allowing them to be releasably coupled together to form a showerhead. The water filter assembly is housed in the body portion and is enclosed by the showerhead formed by the body portion and the face portion. In one embodiment, the body portion comprises about 80 percent of the axial length of the showerhead and the face portion comprises approximately 20 percent of the axial length of the showerhead.

[0018] As illustrated in **Figures 2A and 3A**, the showerhead is assembled by:

- first placing the pivotable inlet into the recess in the water filter assembly;
- placing the water filter assembly into the body portion and guiding the threaded inlet of the pivotable element through the opening in the body portion;
- connecting the body portion to the face portion by the matching threads thereby enclosing the water filter assembly in the body portion and the face portion.

[0019] In the preferred embodiment, the water filter assembly has a bottom annular flange **30** for releasably connecting to corresponding mating portion **32** of the face portion. In the preferred embodiment, the annular flange has a groove for placing a rubber sealing O ring **34**.

[0020] It is also preferred that the recess in the water filter be formed from a plurality of flexible flanges or rib protrusions **36** arranged in an annular formation. In this embodiment, it is preferred that the pivotable element by a ball joint **22** that is releasably retained by the flexible flanges.

[0021] It is also preferred that the tips **38** of the flexible flanges be indented so as to form an annular indent portion **40**. Upon assembly of the showerhead, the inner edge **42** of the opening in the body portion rests on the annular indent portion.

[0022] As illustrated in **Figures 2B and 3B**, the water filter assemby is comprised of a main water filter body **44** which is capped by the top **46** and bottom portions **48**.

The top and bottom portions of the water filter assembly have openings **50** for allowing water passage through the filter. The holes in the top and bottom portions of the water filter assembly are fitted with top and bottom screens or meshes **52** and **54** respectively, preferably made from thin metal, to allow water passage through the filter while retaining the filter elements inside the main water filter body.

[0023] Accordingly, upon attachment of the assembled showerhead filter onto the water pipe, the water flows through the pivotable element into the top of the water filter assembly and out the bottom of the water filter assembly and out of the holes **56** in the bottom face portion. The pivotable element has a bottom opening **58** for allowing water to exit the pivotable element into the water filter assembly. A recess sealing ring **59** is adapted to prevent water from leaving the top of the recess.

[0024] The main filter body of the water filter assembly is preferably adapted with a plurality of smaller openings **60** in an area below the pivotable element for also accepting water into the water filter assembly. A metal screen **53** covers these smaller holes to prevent the filter media from leaving the filter. These smaller holes allow water to flow into the center of the water filter so as to make use of as much of the filter media as possible. The dotted arrows in **Figures 1 and 4A** illustrate the water flow through the pivotable element and the water filter assembly. As discussed, when water leaves the bottom of the pivotable element, some of the water enters the filter through the smaller holes under the pivotable element. The rest of

the water enters the gaps **62** in the side walls of the recess and enters the filter through the larger holes in the filter assembly.

[0025] **Figures 5 and 6A, 6B** illustrate another embodiment of the showerhead filter of the present invention. **Figure 5** illustrates the principles of the present invention as applied to a five function showerhead. The functions of the showerhead include:

I. Massage;

II. Massage/Spray;

III. Fully Spray;

IV. Spray/Aeration (Bubble);

V. Aeration (Bubble).

In an alternate embodiment, a mist function could also be incorporated into the showerhead.

As discussed, the present invention relates to a showerhead having a compact structure having a releasably coupled pivotable inlet. The pivotable element is releasably connected to the replaceable filter cartridge. Having a releasable inlet allows the part to be removed and replaced with newer or differently configured or sized parts. Although the present invention has been described with regard to several embodiments, those embodiments are not to be construed as limiting the scope of the invention. Many embodiments of the invention will become apparent to those skilled in the art in light of the teachings of this specification. The only limitation

of the scope of the invention are the claims appended hereto and equivalents thereof.